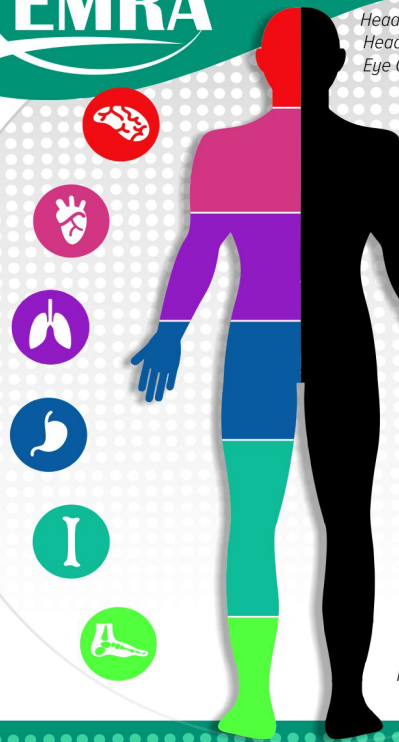
EMRA



BASICS
of Emergency Medicine
A Chief Complaint-Based Guide
3rd Edition

Joseph Habboushe, MD, MBA, Editor-in-Chief
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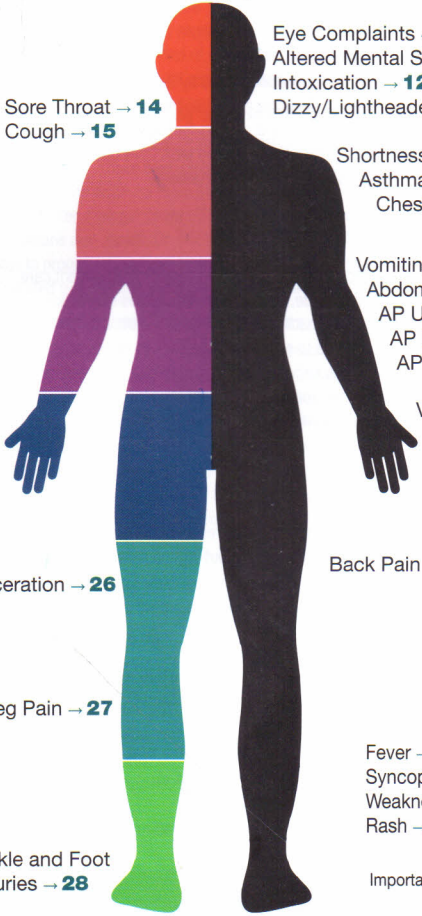


Glossary

AAA	Abdominal Aortic Aneurysm
ABx	Antibiotics
APAP	Tylenol
APD	Afferent Pupillary Defect
ASA	Aspirin
B/L	Bilateral
BMP	Basic Metabolic Panel
BCX	Blood Cultures
Bx	Biopsy
Coags	PT/PTT/INR
CP	Chest Pain
CT-A	CT angiography
CVA	Stroke or CostoVertebral Angle
CXR	Chest x-ray
D/C	Discharge (2 meanings)
DM	Diabetes Mellitus
DTR	Deep tendon reflex
EHL	Extensor Hallucis Longus
EtOH	Alcohol
FND	Focal Neuro Deficit
FOBT	Fecal Occult Blood Testing
F/U	D/C Home with Follow-up Appt
Full ROM	Full Range of Motion
FSBG	Finger Stick Blood Glucose
Gluc	Glucose
h/o	History of
HOB	Head of Bed
HA	Headache
HR	Heart Rate
ICH	Intracranial Hemorrage
ICP	Intracranial Pressure
IIH	Idiopathic Intracranial Hypertension
IOP	Intraocular Pressure
JVD	Jugular Venous Distention
LOC	Loss of Consciousness
MAP	Mean Arterial Pressure
MES-I	Mesenteric Ischemia
MRA	MR-Angiography
N/V	Nausea
NPO	Nothing by Mouth
OBS	Observation
OCP	Oral Contraceptive Pills
OMFS	Oral & Maxillofacial Surgery
PMP	Primary Medical Provider
PNA	Pneumonia
PTA	Peritonsillar Abscess
PTX	Pneumothorax
PUD	Peptic Ulcer Disease
R/O	Rule Out
RPA	Retropharyngeal Abscess
SAH	Subarachnoid Hemorrhage
SBP	Spontaneous Bacterial Peritonitis
SQ	Subcutaneous
Sx	Symptoms
TIA	Transient Ischemic Attack
TTP	Tenderness to Palpation
VBG	Venous Blood Gas
VSS	Vital Signs Stable
WPW	Wolff-Parkinson-White

Headache

First HA • Different from previous HA • Sudden onset
Worst HA • Syncope • Neck stiffness • Significant trauma
Ill-appearing • Meningeal signs • Neuro deficit

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Dangerous 5%	Acute glaucoma	Unilateral, blurry, fixed pupil	*See Eye Complaints, p. 10*	
	Carotid artery dissect	Unilateral, neck pain, trauma?	CTA/MRA, US	Anticoagulation, cs nrsrg
	CO Poisoning	Weakness, n/v, exposure?	Co-oximetry, VBG	100% O_2
	Encephalitis	Fever, AMS, seizures?	CT/**LP**	IV ABx/antiviral/isolation
	Encephalopathy (HTN)	dBP >120, AMS, ? Δ vision	√ end organs	MAP↓ ≤25%
	Meningitis	Fever, stiff neck, photophobia, rash	CT/**LP**	Steroids before ABx, before LP, isolation
	Preeclampsia	>20 weeks up to 6 weeks poastpartum, ↑ BP, HA	LFTS/CBC/UA	Mag, BP control, Cs OB/GYN
	Pseudotumor (IIH)	Overweight, young, visual Sx	CT, **LP**	LP, acetazolamide?
	SAH	Sudden, worst, syncope?	**CT**/LP	BP control/cs nrsrg
	Temporal arteritis/ giant cell arteritis	Unilateral, >55 y/o, tender temporal artery, jaw pain	ESR	Steroids, F/U with ophthalmology/rheumatology
	Traumatic ICH	Trauma, EtOH, elderly	CT	Cs neurosurgery
Benign 95%	Cluster	Unilateral, sudden, orbital, tears, male, tobacco, 40s		O_2
	Migraine	Unilateral, N/V, photophobia	Clinical	NSAIDs, metoclopramide, IVF
	Sinusitis	URI, sinus tenderness/ opacified	Clinical, CT?	Nasal spray/pseudoephedrine, ABx?
	Tension	B/L, tight	Exclusion	Pain control

Pearls + Pitfalls
- Acute HA + syncope = SAH
- HTN rarely causes HA
- >50 y/o and NEW HA → concerning

Documentation
Onset, unilateral vs. B/L, similar to previous
Fever, supple neck, photophobia
Pupils
Full neurological exam

Baydoun S, Lanoix R. Updated by **Gupta N, Coplin M, Gutteridge D, Jiang L, Robak M.**

Head Injury

LOC • Blood thinners • Vomiting • Seizure
Significant mechanism • Severe HA • Elderly
• Alcoholic • Intoxicated • Neuro deficit
Skull Fx (Battle's sign, raccoon eyes, nasal CSF leak, hemotympanum)
• Pupils asymmetrical • Distracting injury

Brain

BEST RULE: Canadian Head CT Rule

- Using only major criteria will capture ~100% of patients requiring intervention

C-Spine

BEST RULE: Canadian C Spine Rule (CCR)

- More sensitive and specific than Nexus

SAH, subdural hematoma, epidural, ICH, skull Fx

Consult neurosurgery
Closely observe neurological status
Consider: Antiseizure meds, ↓ICP, ICU

Facial Fracture

Nasal → F/U with PMD/ENT
Orbital → Ophtho/OMFS consult
Other → Consider consult OMFS

GCS	1	2	3	4	5	6
Eyes	Closed	With pain	With voice	Spontaneous		
Verbal	No sounds	No words	Inappropriate	Confused	Normal	
Motor	None	Posture (extension)	Posture (flexion)	Withdraws from pain	Localize pain	Obeys

Pearls + Pitfalls

- Elderly or alcoholics: Beware subdural
- Lucent period: Epidural
- CCHR: Don't forget to look in ears
- Anticoagulants (not antiplatelets) consider delayed bleed

Documentation

General: LOC, N/V, Sz, elderly, alcoholic, distracting injury, blood thinner use
Head: Deformities, TMs, nasal septum, pupils, lacs/abrasions
Neuro: Full exam
MVC: Mechanism, belted, airbag, totaled

Geracimos D, Habboushe J, Lanoix R. Updated by **Gupta N, Bennett J, Sperling J, Pendery L, Nesheiwat L.**

NEW!

Eye Complaints

TRAUMATIC

DISEASE	HX & PE	TREATMENT
*Blowout fx	↓ EOM; enophthalmos	Cs Ophtho/ENT
*Chemical conjunct	Exposure; alkali >> acid	Copious irrigation, ABx
Corneal abrasion	FB sensation; flrsn uptake	Remove FB; ABx gtt
*Eyelid laceration	Tarsus/canthus involved?	Repair by ophtho
*Globe rupture	irregular pupil, +Seidel	Protective cup
*Retrobulb hematoma	Proptosis; APD; ↓ EOM; ↑ IOP	Lateral canthotomy/lysis
Subcon hemmorhage	Blood collection in sclera	Avoid ASA/NSAID

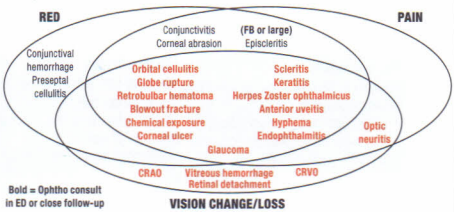
ATRAUMATIC

	DISEASE	HX & PE	WORKUP	TREATMENT
External Eye	Conjunctivitis	Red; discharge (purulent if bacterial)	Clinical	ABx drops (FQ if contacts)
	*Corneal ulcer	Red; FB sensation, seen on flrsn	Clinical	ABx drops/oint; no contacts
	Episcleritis	Red; no vision loss; blanch w phenyleph	Clinical	NSAID, self-limited
	*Herpes Zoster ophthalmicus	V1 dermatome rash; Hutchison sign; painful red; flrsn dendritic lesion	Clinical	Systemic + topical antiviral
	*Keratitis	Skiing, welding; painful, red; photophobia; flrsn punctate lesions	Clinical	Topical cycloplegic
	*Scleritis	Red; painful Δ vision; systemic vasculitis?; no blanching w phenlyeph	Clinical	NSAID, topical steroid
Internal Eye	*Anterior Uveitis	Painful Δ vision; red; limbic flush	Clinical	Top steroid + cycloplegic
	*CRAO	Sudden painless Δ vision; APD, cherry-red macula; white optic nerve	Cardiac w/u ESR/CRP	Occular massage? ↓ IOP
	*CRVO	Painless Δ vision, retinal hemorrhages	Clinical	Manage HTN, DM
	*Endophthalmitis	Painful Δ vision, hypopyon, ↑ IOP	Clinical	Intravitreal ABx
	*Glaucoma	Painful Δ vision, vomiting, hazy cornea, mid-fixed dilated pupil; ↑ IOP	Clinical	Top + systemic IOP meds
	*Hyphema	Trauma?, Sickle?, blood in ant chamber	CBC; coags	Sit up, avoid ASA/NSAID
	*Retinal detach	Painless Δ vision, flashers, floaters	Ocular US	Cs ophtho
Extraoc	Hordeolum	Erythema or nodular; evelid pain	Clinical	Warm compress, ABx oint
	*Optic neuritis	Painful Δ vision, APD, abnormal color	MRI	Consider steroids, Cs neuro
	*Orbital cellulitis	Pain with EOM, APD, proptosis?	CT face; CBC	IV ABx
	Preseptal cellulitis	Erythema of periorbital skin	Clinical	Warm compress, PO ABx

* = Ophthalmology consult in ED or close F/U

Documentation

PMH: Fever, Neuro symptoms, Systemic symptoms, Painful/painless vision change?
Skin: Rash (vesicles, erythema, etc.), laceration
Eyes: Pupils, EOM, visual acuity, visual field, IOP, fluorescein uptake/staining, fundoscopy, slit lamp



Lee H, Steinberg E, Nagori S, Lo C.

Altered Mental Status

Immediate Actions

Check FS → D50 • Opioid with resp depression → naloxone • Uncooperative → sedate + restrain

AEIOU TIPS

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
A	Alcohol *(See Intoxication, p. 12)*	+ Alcohol on breath	Clinical, EtOH level?	Observe
	Alcohol withdrawal	Confusion, anxiety, diaphoresis, BP, tremors	Clinical, EtOH level	Anxiolytic, IVF, consider admit if CIWA >10
E	Electrolytes		BMP, EKG	
	Encephalopathy (Hep)	Jaundice, cirrhotic	LFTs, ammonia	Lactulose, neomycin
	Encephalopathy (HTN)	HA, diastolic BP > 120	√ End organs	MAP ↓≤ 25%
I	Insulin	DM	FSBG	D50
O	Opiates	Pupils, ↓ RR	Naloxone	Observe, naloxone?
U	Uremia	Renal failure, AV fistula	BUN/Cr	Dialysis (cs renal)
T	Trauma	Pupils, blood loss?	CT head	Cs neurosurgery/IVFs
	Toxins	Pupils, skin, reflexes	ASA, APAP, UTox	Cs tox/poison control
	Tumor	Insidious, focal deficit	CT head	Cs neurosurgery
	Thyrotoxicosis	Tremors, ↑HR/T, N/V	TSH	IVFs, propanolol
I	Infection	Fever, source?, elderly, SIRS	UA/CXR, +/- other sources	IVFs, ABx, source?
P	Polypharmacy	New or change in meds	Tox W/U	D/C, change meds
	Psychiatric	H/O psychiatric illness	Exclusion	Cs psychiatry
S	Seizure	Seizure hx, tongue-biting, post-ictal	Lactate, CT head (if 1st time)	Cs or F/U neurology
	Stroke	Focal Sx, time of onset	CT head	Cs neurology, tPA?, ASA?

Documentation
Difficult! Search for family, PMD, EMS sheet, previous hospital record. Document the patient's contact information. Tell the story of what happened during resuscitation. Compare with baseline mental status.
General: LOC, N/V, Sz, HA?, elderly? + alcohol on breath?
Head: Signs of trauma
Neuro: Document as best you can *(See Head Injury, p. 9).*

Habboushe J, Shah K. Updated by **Nguyen V, Coplin M, Gutteridge D, Jian L, Nesheiwat L.**

Intoxication

#1: Fingerstick
#2: Undress/examine completely
#3: Signs of trauma? → Low threshold for CT head
#4: Epigastric tenderness? → Low threshold for pancreatitis workup

Confident it's only alcohol?
Alcohol on breath? Admits to EtOH?
Frequent visits for EtOH?

Yes

Consider IM/IV thiamine/folate
Observe to sobriety (A&Ox3, steady gait)
Not waking → Consider CT head
Severely intox → Pulse Ox, capnography, nasal trumpet, and/or monitor
Reassess q1-2hrs
Once sober, assess for SI/HI

Failure to sober w/time?

No

Consider wider AMS differential
(See Altered Mental Status, p. 11)
Consider EtOH/ASA/APAP levels, UTox

Pearls + Pitfalls
- Beware! Intoxication mimics:
  - ICH
  - Hypoglycemia
  - Hypothermia (in cold environment)
- Watch out for developing withdrawal!
- EtOH level not predictive of sobriety; don't routinely check

Documentation
General/Neuro: GCS *(See Head injury, p. 9)*. Neurological exam grossly consistent with EtOH intoxication. Frequently reassess.
HEENT: Signs of trauma, PERRL
Abdominal: Epigastric tenderness
Skin: Cellulitis/lacerations/abrasions
Reassessment before D/C: A&Ox3, steady gait, no focal deficits, no new complaints

Khan F, Habboushe J, Shah K. Updated by **Nguyen, Bennett J, Pendery L, Choe B, Mordel A.**

Dizzy/Lightheaded

See syncope, p. 30

Fever • Headache • Focal weakness • AMS
CP/SOB/Palps • Dark stools • Diaphoresis
Abnormal HiNTS (Head impulse–Nystagmus–Test of Skew)

Sensation?

Lightheaded or pre-syncope

BAD: Cardiac, anemia, ↓ glucose
COMMON: Dehydration, nonspec

Vertigo

Central: BAD (insidious, mild, constant)
Periph: COMMON (sudden, intense, intermittent)
Use **HiNTS** exam to distinguish between the two

	VERTIGO	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Periph	BPPV	Positional, fatigable	Dix-Hallpike	Meclizine, Epley mnvr
	Labyrinthitis	Recent URI, Δhearing		Meclizine, steroids
	Meniere's	Δhearing, tinnitus		Meclizine, HCTZ
Central	CVA/ICH	Nystagmus, ipsilateral face numb	CT/MRI	Cs neurology
	MS	Neuro Sx, 20-30s	MRI	F/U neurology
	Acoustic neuroma	Unilateral hearing loss	MRI	Cs neurology
	Carotid artery dissect	Unilateral, neck pain, trauma?	CTA/MRA, US	Anticoagulation, cs nrsrg

	LIGHTHEADED	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Serious	Cardiac (valve/ arrhythmia)	CAD/CHF, SOB/CP/palps, murmurs	EKG, troponins, monitor	ASA, admit telemetry
	Anemia	GI bleed/melena, conjuctiva pallor, FOBT	CBC, coags, T&S	Source? Transfuse?
	↓ Glucose	DM, AMS	FSBG	D50/food, (PO meds?)
	Infection	Elderly, source?	UA/CXR, lactate	Source
Common	Orthostatic	Dehydrated? New med?	Orthostatic VSs	Fluids
	Nonspecific	Infection? Vasovagal?	Exclusion	

Documentation
HEENT: Nystagmus, TMs, WNL, hearing exam, carotid bruits, no conjunc pallor, MMM
Neuro: Complete (dysmetria; Romberg; gait; all CNs, sensation, motor), Dix-Hallpike
Heart: Murmurs, arrhythmia

Seccurro S, Lanoix R. Updated by **Paulis J, Arena E, Levin J, Choe B, Mordel A.**

Sore Throat

Fever • Drooling • Abdominal complaints
Uvula NOT midline • Voice change • FB sensation

DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Epiglottitis	Fever, drool, Δvoice,	Neck x-ray	Airway, Cs ENT
FB	FB sensation/stridor	Clinical, CT neck	ENT, scope
GC/Chl*	Oral sex, discharge	GC/Chl Cx	Ceftriaxone + (azith/doxy)
Ludwig's	Dental dz, neck swelling	CT neck	Airway, ABx, ENT cs
Mono	Lymphadenopathy, splenomegaly, rash after PCN	Monospot?	Supportive, no contact sports
PTA	Fever, deviated uvula	Clinical (US?)	Aspirate, ABx, steroids
Strep	Centor criteria**	*(See chart below)*	PCN (IM or PO), steroids?
Viral	Fever, cough, congestion	Exclusion	Symptomatic treatment

*GC/Chl=Gonorrhea/Chlamydia

****CENTOR CRITERIA**

		Score	Strep?	Next steps
Fever	+1	0 or 1	<10%	Nothing
Exudates	+1	2 or 3	17-35%	Test
Tender lymph nodes	+1	4	>50%	Treat
No cough	+1			

Note: The treatment of strep is a topic of ongoing debate. Many attending physicians will depart from these old guidelines.

Documentation
General: Phonation normal
HEENT: Midline uvula, no exudates, tonsils not enlarged, non-erythematous, no drooling
Neck: Supple, no cervical lymphadenopathy

Matern J, Lanoix R. Updated by **Arena E, Downing J, Levin J, Bandzar S, Kleist S.**

Cough

Respiratory distress • Fever/sputum • HIV/Immunocompromised
Hemoptysis • ACE-inhibitor • TB risk factors

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT	
Acute	**All. rhinitis**	Seasonal, swollen eyes	Clinical	Antihistamine/loratidine	
	Asthma/COPD	Wheezing, tobacco	Clinical, CXR *(See SOB, p. 16)*	Nebs, steroids, COPD: ABx?	
	Pneumonia	Fever, sputum, dyspnea	*(See SOB, p. 16)*		
	Sinusitis	Purulent rhinorrhea, point tenderness @ sinus	Clinical	Nasal spray/ pseudoephedrine + ABx?	
	TB	Night sweats, hemoptysis, weight loss, travel, jail, insidious	Isolation, CXR	ABx, admit to isolation	
	URI	Congestion, rhinorrhea, aches	Clinical	Reassurance, zinc?	Chronic
	ACE-Inhibitor	Hypertension, ARBs (rare)		Discontinue meds	
	GERD	Food, epigastric	Clinical	GI cocktail	

HIV/Immunocompromised? → Broaden differential (PCP, TB)

Documentation
General: Cough x day/weeks. No new medications or ACE. Cough productive to yellow sputum, fever. No history of asthma/COPD/CHF. No sick contacts or recent travel.
HEENT: Nasal congestion. Oropharynx non-erythematous.
Lung: Clear bilaterally. No wheezing/rhonchi/crackles.

Habboushe J, Shah K. Updated by **Paulis J, Downing J, Unks E, Bandzar S, Kleist S.**

Shortness of Breath

History of intubation • Sudden • Chest pain • Fever • Cough
Leg swelling/pain • OCPs • Recent surgery • Cancer

CHF/ACS

HP: Tripod, rales, edema, JVD
DX: CXR, BNP
TX: Nitrates, lasix, ACE-I, BiPAP?
R/O: MI, ischemia

COPD/Asthma

(See Asthma, p. 17)

HP: Wheeze, tobacco
DX: Clinical, CXR
TX: Nebs, steroids, ABx?
SICK: Mag? Epi? BiPAP? Tube?
R/O: PNA, PTx

Pneumonia

HP: Fever, productive cough
DX: Clinical/CXR
CURB-65 MD CALC
TX: ABx
Outpt: Azith
Inpt: Ceftr + Azith
Hosp-acq: Cefp + Vanc + Azith

Anaphylaxis

(Consider angioedema)

ABCs/Tube?/Cric?
Steroids+diphenhydramine+H2
Nebs?
SICK: Epi?

PE

HP: Sudden/CP, OCP, tobacco, DVT Sx, surgery, CA, immob, Well's criteria. MD CALC
DX: PERC*, D-Dimer, CT-A
OR V/Q scan (no contrast)
TX: Enoxaparin
OR Heparin (if high Cr/preg)
OR oral Xa inhibitor
Unstable BP: tPA?

PTX

HP: Sudden/CP, ↓breath sounds, trauma ***OR*** tall/tobacco
DX: CXR/US (no sliding)
TX: Needle→pigtail/chest tube

Anxiety

HP: Tingling, carpopedal spasm
DX: Exclusion
TX: Reassure

***PERC: PE Rule-out criteria (If ALL, then <2% PE)** MD CALC

Age < 50	No recent trauma/surgery
HR < 100	No hemoptysis
O_2 RA > 94%	No exogenous estrogen
No past DVT/PE	No clinic signs of DVT

Respiratory failure?
"Tiring out"
Hypoxia ***OR*** ↑ PCO_2 (poor ventilation)
TX: BiPAP* Intubation?
*AMS is a contraindication to BiPAP 2/2 risk of aspiration

Documentation
PMH: Asthma – past intubations, hospitalizations, tobacco history in "pack years"
COPD – home O2? PNAs? Past hospitalizations? Intubations?
PE – FH, OCPs, tobacco, BMI, recent immobilization, recent surgery, cancer, past DVT/PE
HEENT: Pharynx/tonsils/uvula not swollen, stridor
Neck: JVD
Lung: Wheezing (COPD/asth), crackles/rales (CHF), rhonchi (PNA), coarse (bronchitis), unilateral ↓ breath sounds (PTX)
Extremities: +2 distal pulse b/l, no pitting edema, [unilateral swelling/pain, Homans' sign (DVT/PE)]

Kirschner J, Wong T. Updated by **Barca M, Blutinger E, Unks E, Behrooz N, Andonian D.**

Asthma

Emergent? → **Consider Epi SQ/neb (0.3mg 1:1000)**
Consider BiPAP → intubation

#1: History
Past intubations, admissions/ICU, ED visits
Last oral steroids. Home meds and response
Triggers? Should be dry cough, no F/C

#2: Physical exam
Respiratory rate. Wheezing (if very tight, hard to hear).
Speaking full sentences/using accessory muscles.

#3: Basic treatment
Nebs x 3 (albuterol + ipratropium)
Oral steroids (pred 40 or 60, ***OR*** dexamethasone 10)
Productive cough? F/C? → Consider CXR
Frequent reassessments

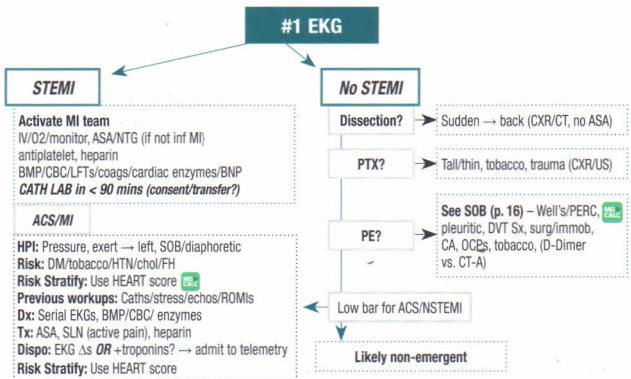
#4: "SICK" treatment
Mag (2g IV)
Epinephrine (SQ or nebulized)
BiPAP?
IV steroids (instead of oral)
Ketamine?
Obtain VBG/ABG to assess ventilatory status
If intubation → Induce with ketamine
Set for low volumes, slow RR, prolonged expiration

Pearls + Pitfalls
- Wheezing is often absent when severe/tight.
- Asthma is not a chief complaint. Beware of mimics: CHF, anaphylaxis, COPD, stridor.
- Some people say "asthma" to mean "COPD." Clarify!
- Peak flows have unproven utility.
- Questionable complaince? Consider IM dex!
- Discharge: Refill home meds/ensure access to MDI.
- Consider Rx for inhaled steroids if indicated.

Documentation
General: Mild/moderate/severe respiratory distress, toxic? Dry cough/nasal congestion.
Speaking full sentences? What was given by EMS?
HEENT: Nasal flaring
Lung: Inspiratory/expiratory wheezing, tight. Retractions. Abdominal breathing.

Kirschner J, Wong T. Updated by **Barca M, Blutinger E, McFarland D, Behrooz N, Andonian D.**

Chest Pain



	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Emergent	ACS/NSTEMI	*See above*		
	Aortic Dissection	HTN, sharp/tearing→back, neuro deficit	CXR/**CT-A**	Goal HR 60-70 → Goal MAP 60-75 → cs surgery
	Esophageal rupture	Wretching, EtOH	CXR/abdominal XR	Cs surgery
	PE	*(See Shortness of Breath, p. 16)*	D-Dimer/CT-A	Anticoagulation, (tPA if ↓BP)
	Pneumothorax	Tobacco, sharp, trauma, tall	**CXR**, US	Pigtail/chest tube → cs surgery
	Tamponade	Beck's: ↓heart sounds, ↓BP, +JVD	Echo	Unstable → Pericardiocentesis
Non-Emergent	Cocaine CP	ACS CP	EKG, troponins	No βB, 2-trop R/O, ASA, benzos
	Endocarditis	Fever, murmur, IVDU, Janeway/Osler	Echo, blood cultures x 3	ABx, cs cardiology
	GERD	Burn, postprandial → throat	GI cocktail	GI cocktail, PPIs
	Musculoskeletal	Reproducible	Exclusion	Pain (CXR R/O PTX)
	Pericarditis	Lying flat, fever?, rub	EKG, echo	NSAIDs
	Pneumonia	Fever/productive cough	CXR, core temp	ABx *(See SOB, p. 16)*

Pearls + Pitfalls

- ACS and PE patients can be sick but not look sick.
- EKGs: Get old for comparison; get serial EKGs.
- ACS concerning if: diaphoresis, vomiting, *right* arm.
- Improvement with symptomatic treatment (eg, NSAID or GI cocktail) should *not* be reassuring!
- Patients may confuse palpitations for pain → consider arrhythmia

Documentation

General: Diaphoresis, presently CP?, tachypnea, BPs in both arms
Extremities: +/- unilateral/bilateral LE edema
Heart/Chest: RRR s1/s2, no murmurs/rubs, ↓ heart sounds, no JVD, tender chest wall
Lung: Decreased breath sounds, rhonchi, rales, wheezing (with location)

Khan F, Habboushe J, Shah K. Updated by **Thomas M, Akomeah A, McFarland D, Fuehrer J, Mohan S.**

Vomiting

Bloody/coffee grounds/bilious • Cannot tolerate PO • Dehydration
Headache • Abdominal pain • Vertigo • Ingestions • AMS • Aspiration

#1 Immediate fingerstick/UPreg

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Abdominal	SBO	Surg hx, ↓BMs/flatus	CT (KUB rarely used)	NG tube, cs surgery
	Other abdominal (acute gastroenteritis, appendicitis, gallbladder, pancreatitis, PUD, perforated, etc.)			*(See Abdominal Pain, p. 20)*
Head	↑ ICP	HA, HTN, FND, Δ vision	**CT**/LP	Cs neurosurgery
	Meningitis	Fever, neck, photophobia	CT/**LP**?	IV ABx/steroids/isolation
	Vertigo	Room spinning	*(See Dizzy/Lightheaded, p. 13)*	
Other	Abnormal lytes	Cause or result?	BMP, LFTs	Specific abnormality
	ACS/MI	CP/SOB	EKG, troponins	*(See Chest Pain, p. 18)*
	Acute gastroenteritis	Diarrhea, no TTP, sick contacts	Clinical	IVFs, antiemetics, travel? → ABx
	DKA	AMS, DM	FSBG/UDip, acetone, anion gap, pH	**IVFs**, insulin, K+, when appropriate, consider underlying cause, cs ICU
	EtOH/tox		If AKA: D5 NS	IVFs *(See Intoxication, p. 12)*
	Hyperemesis	Pregnant	UPreg, ketones?	Antiemetics, IVFs, D5
	Post-tussive		Pertussis?	

Pearls + Pitfalls
- Peritoneal signs (rebound/rigid abd) → consider immediate surgery consult.
- No metoclopramide if you suspect SBO (use ondansetron, which is not a pro-motility)
- Can't tolerate PO? Can't go home.
- Actual diarrhea is reassuring (make sure it's not just soft stool).
- Get Upreg on all females of child-bearing age.

Documentation
General: Non-bloody, non-bilious vomiting 3x/day x 2 days. No HA/abdominal pain/vertigo/diarrhea. No new drugs. Travel hx. MMM vs. dry
HEENT: No Sx of head trauma. Full neurological exam.
Abdominal: Soft NDNT
Reassess: Tolerating PO

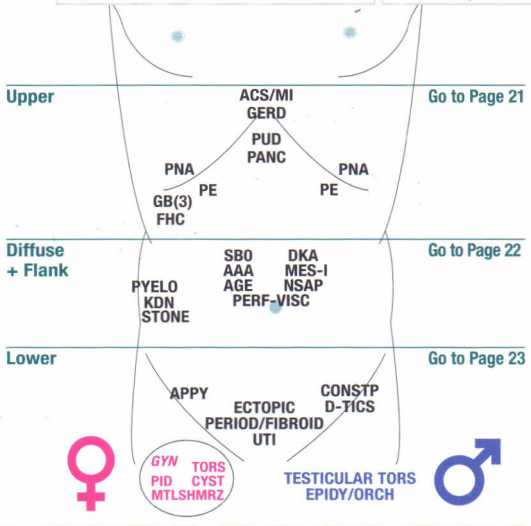
Matern J, Habboushe J, Lanoix R. Updated by **Thomas M, Akomeah A, Choi H, Fuehrer J, Mohan S.**

Abdominal Pain

Life-Threatening
MI, AAA, MES-I, ovarian torsion, perf visc, ascending cholangitis, splenic rupture

Early Thoughts
- Make NPO
- Upper abdominal + ACS risk → EKG
- Female age 12-50 → UPreg
- Lower abdominal, female → UDip, pelvic exam
- Lower abdominal, male → GU exam
- Diffuse → FSBD (r/o DKA)
- Elderly → Likely CT, US r/o AAA
- Peritoneal → CXR (r/o free air), immediate surgical consult
- Potential CT? → Give oral contrast early

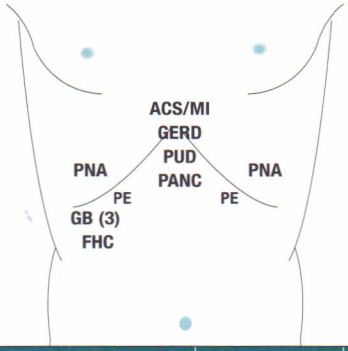
Very sick? → Aggressive approach
- 2 large IVs → fluid resuscitate
- NPO/pain control
- Workup
  - EKG, FSBG, POC lactate
  - Labs: CBC, BMP, LFTs, lipase, FOBT, lactate, troponin, UA, (HCG)
  - Upright CXR, prep for CT
- Early surgical consult



AGE = Acute gastroenteritis
D-TICS = Diverticulitis
FHC = Fitz-Hugh-Curtis
GB(3) = Cholecystitis, GB stones/colic and cholangitis
NSAP = Non-specific abdominal pain
PANC = Pancreatitis
PE = Pulmonary Embolism
PERF-VISC = Perforated viscous
TORS = Torsion

Habboushe J, Mannino C, Wong T. Updated by **Sperling J, Zhang X, Choi H, Fuehrer J, Mohan S.**

Abdominal Pain–Upper



DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
ACS/MI	*(See Chest Pain, p. 18)*	EKG, troponins	*(See Chest Pain, p. 18)*
Fitz-Hugh-Curtis	Young female, STDs, RUQ TTP	Pelvic (PID)	PID Tx + cs GYN
Gallbladder – Cholangitis	Reynold's: fever + RUQ + jaund Charcot's (+ AMS + ↓BP)	**US**, (LFTs/CT)	ABx, cs GI for ERCP
Gallbladder – Cholecystitis	Constant, fever, nausea, vomiting, tender RUQ +Murphys	**US**, (LFTs/CT)	ABx, cs surgery
Gallbladder – Colic	Intermittent, nontender RUQ	**US**, (LFTs/CT)	NSAIDs, F/U surgery
GERD	Burning → throat	GI cocktail	GI cocktail, PPI/H2
Pancreatitis	Sharp → back, EtOH/gallbladder?	Lipse, LFTs, RUQ U/S	NPO, IVFs, Ranson's*
Pneumonia	*(See Chest Pain, p. 18)*	CXR	*(See Chest Pain, p. 18)*
PUD (bleeding or peforated?)	Sharp? → chronic NSAID/ EtOH use	GI cocktail, pallor → CBC/FOBT, peritoneal-upright CXR	PPI/H2, F/U GI Bleed: cs GI Perf: cs Surg

EBM/EMC *Ranson's: WBC>16, age>55, glucose>200, AST>250, LDH>350. 3+/5 → consult ICU

Pearls + Pitfalls
- Consider chest etiology (ACS/PNA/PE)
- Gallbladder on differential? → Quick bedside US

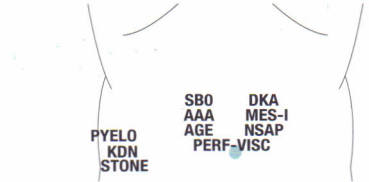
Documentation
PMH: EtOH abuse? ACS risk factors
Abdominal: Point tenderness, rebound, guarding, Murphy's sign
Gallbladder ultrasound: Stones/shadows, sonographic Murphy's, wall thick >3mm, CBD >6mm

Habboushe J, Mannino C, Wong T. Updated by **Sperling J, Zhang X, Choi H, Fuehrer J, Mohan S.**

Abdominal Pain–Diffuse+Flank

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Dangerous	AAA	Male/old/tobacco	US (>3cm), CT-A	Emerg surgery, T&S 6 units PRBC
	DKA	DM, polyuria, n/v, tachypnea, AMS (severe)	FSBG/UDip, acetone, anion gap, pH	**IVFs**, insulin, K+, when appropriate, consider underlying cause, cs ICU
	Mesenteric ischemia	AFib? Pain out of proportion	Lactate (late finding), CT-A	Cs surgery
	Perforated viscous	Sudden rebound/guard	CXR, CT	ABx → Cs surgery
	SBO	Previous surgery? N/V, ↓BMs/gas	AXR, CT++	NG tube, cs surgery
Common	Acute gastroenteritis	N/V/D, fever?, travel?	Clinical	IVFs, antiemetics, travel? → ABx
	Kidney stone	Colicky, writhing → groin	UA, US/CT?	Ketorolac, tamsulosin
	Nonspecific	Exclusion	Exclusion	Close F/U to PMD, return precautions
	Pyelonephritis	Urine Sx, CVA-T, fever	UA + CVA-T	ABx, admit if high risk*

*High-risk pyelo patients (need admission): Preg; 1 kidney; toxic; can't tolerate PO



AGE = Acute gastroenteritis

NSAP = Non-specific abdominal pain
PERF-VISC = Perforated viscous

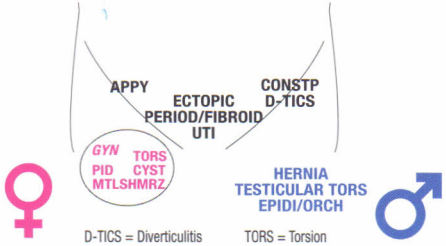
Pearls + Pitfalls
- Appy, d-tics, etc., can start "diffuse"
- Surgery admit? → NPO, coag, T&S, Foley, EKG

Documentation
PMH: AFib? (Mes-I), past surgeries? (SBO), DM? N/V? BMs? Dysuria/frequency? Tobacco? (AAA)
General: Dehydrated? (DKA), writhing (kidney stone), pain out of proportion (Mes-I)
Abdominal: Point tenderness. Rebound/guarding distention? Murphy's sign/McBurney's
Back: CVA tenderness
AAA Ultrasound Views: 3 transverse, 1 longitudinal, 1 bifurcation: <3cm/1.5cm
Kidney US: Hydro?

Habboushe J, Mannino C, Wong T. Updated by **Sperling J, Zhang X, Choi H, Fuehrer J, Mohan S.**

Abdominal Pain–Lower

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT	
Dangerous	Appendicitis	Fever/N/V, ↓appetite, migrates to McBurney's point	CT+	ABx, cs surgery	
Dangerous	Hernia	Mass, N/V, ↓BMs	Reduce?, CT+	F/U or cs surgery	
Dangerous	D-TICS	LLQ, fever?	Clinical, CT+	ABx, D/C home?	
Dangerous	Testicular torsion	Sudden/sharp, no crmstr	US	Detorsion, Cs Urology	
Dangerous	Ectopic	Woman age 12-50, LMP	UPreg, hCG US	Cs OB/GYN	GYN
Dangerous	Ovarian torsion	H/o cyst, sudden/sharp, n/v	US	Cs OB/GYN	GYN
Common	Ovarian cyst	Adnexal tender	US r/o torsion	NSAIDs, F/U OB/GYN	GYN
Common	PID/TOA	Young, +sex, vaginal d/c, +CMT	Clinical, GC/Clcx	IM ABx, F/U PMD	GYN
Common	Mittelschmerz	Adnexal, mid-cycle	Exclusion	F/U PMD	GYN
Common	Period/fibroid	LMP, VB	US (outpatient?)	NSAIDs, F/U PMD	GYN
Common	UTI	Urine Sx, no CVA-T	UA	ABx	
Common	Constipation	↓BM, opioids?	Exclusion	Diet, meds, fleet, disimpact	
Common	Epididymitis/ Orchitis	Tenderness, discharge	Clinical, GC/cl	IM ABx, F/U PMD	



Pearls + Pitfalls

- *Always* consider testicular/pelvic exam for lower abdominal pain.
- Emergents: Ovarian torsion, testicular torsion, ectopic
- PID/epididymitis: Don't use 1 dose azith (needs doxy x2wks).

Documentation

HPI: LMP, Sexual history, N/V, BMs, dysuria/frequency
Abdominal: Point tenderness, rebound/guarding distention, McBurney's
Pelvic: Normal external genitalia, discharge, no CMT, Os closed, adnexal tenderness
Testicular: Normal external genitalia, tenderness (epididymal vs. testicle), discharge, cremaster+bell-clapper (torsion)

Habboushe J, Mannino C, Wong T. Updated by **Sperling J, Zhang X, Choi H, Fuehrer J, Mohan S.**

Vaginal Bleeding

Clots • Abdominal pain • Saturating multiple pads
Previously required RHOGAM • Vaginal discharge
Related to intercourse • Abnormal pelvic exam

U Preg +

CBC, hCG, T&S
US (transvaginal if <8 wks)

U Preg –

No Sx anemia?
and <1 pad/hour?
Consider d/c home

IUP	hCG	Os*	FETAL HEART	WORKUP	PLAN
No	<1,500	Closed	—	Early (vs. complete vs. ectopic)	Tell OB; outpt US; repeat hCG in 2d
No	<1,500	Open*	—	Inev (vs. complete vs. ectopic)	
No	>1,500	Either	—	R/O ectopic	**Cs OB**
Yes	—	—	No (>8wk)	Missed AB	
Yes	—	Closed	Yes or <8wk	Threatened AB	**Consider D/C home** Next day US & GYN appt
Yes	—	Open*	Yes or <8wk	Inevitable AB	

*It's a common rookie mistake to call a closed Os "open." Err on the side of "closed" with F/U to OB/GYN.

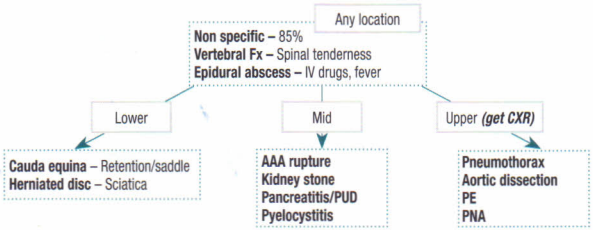
Pearls + Pitfalls
- Immediate UPreg/UDip
- Rh-negative and pregnant → RHOGAM
- Actual *vaginal* bleeding?
- Gestational sac **and** yolk sac necessary to call IUP.

Documentation
HPI: LMP
Pelvic: Blood pooling in vault; Os closed; no adnexal masses or tenderness
Skin: No pallor

Habboushe J, Clark M. Updated by **Yang T, Zhang X, Aylyarov I, Irwin H, Castelluci G.**

Back Pain

Cancer • Fever • IV drugs • Neuro deficits
Point tenderness (osteoporosis/extremes of age)
Saddle anesthesia • Trauma • Urinary retention • Weight loss



DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
AAA rupture	Male, old, tobacco	US, CT	Emerg surgery, T&S
Cauda equina	Urinary retention, saddle anesth, EHLs	MRI	Steroids, cs neurosurgery
Compression Fx	Osteoporosis, point tenderness	XR, MRI?	Pain control, cs ortho/spine
Epidural abscess	IV drug, fever, spinal point tenderness	MRI	IV ABx, cs neurosurgery
Herniated disc	Sciatica, straight-leg raise	Clinical	Pain control, F/U PMD
Kidney stone	Writhing → groin, hematuria	US/CT-	NSAIDs
Nonspecific	85%	No x-rays	Pain control
PE	*(See SOB, p. 16)*		
Pyelonephritis	CVAT, urinary Sx	UA	ABx, F/U PMD
Vertebral Fx	Elderly, trauma, spinal point tenderness	X-rays	Cs ortho/spine

Pearls + Pitfalls

- Most do NOT need x-rays. Get patient comfortable and D/C home.
- Consider x-ray when h/o cancer, extremes of age, osteoporosis, or new back pain > 6 wks in elderly.
- Don't miss AAA.
- Only 33% of epidural abscesses have fever → consider in all IV drug abusers.

Documentation

General: Trauma, duration, IV drug use, urinary retention.
Abdominal: No pulsatile mass; equal femoral pulses
Neurovascular: Sensation intact/full ROM throughout. +2 distal pulse b/l, <2 sec cap refill. No saddle anesthesia. EHLs 5/5 b/l. Knee and ankle DTR
Msk: Spinal tenderness, para-spinal tenderness, straight-leg raise, CVA tenderness

Meade J, Shah K. Updated by **Hong A, Yang T, Aylyarov I, Patel S, Kulkarni M.**

Laceration

Actively bleeding • Bite • Concerning mechanism
Deep wound • Diabetic • Potential nerve/tendon/vessel involvement
Tetanus

#1: Update tetanus
#2: NV exam: SILT, full ROM, 2-pt discrimination

#3: Duration
<6h: Repair all
>24h: Don't repair
6-24h: Depends
More likely: face
Less likely: hands/feet, dirty, IM comp

#4: Size/type
Skin Adhesive: Linear, low tension, bloodless
Face: 6.0 (or skin adhesive)
Joints: Larger, always nylon
Hands: 5.0/4.0 if high-tension
Everywhere else: 4.0/3.0

#5: Special situations
Eyelid margin: Consult ophto. Perform visual acuity/eye exam.
Lip: Vermillion border: Consider consulting oral and facial surgery. Document tooth exam.
Hands/feet: Tendon involvement: Obtain appropriate consult. NV exam with 2-pt discrimination.
Scalp: Use staples. Assess head injury *(see Head Injury, p. 9)*
Bites: Severity—Cat > human > dog. Look up treatment approaches, as suturing may not be recommended.
Deep: Consider a few deep, large absorbables (except in hands).
Shattered material/FB sensation: low threshold for XR
Joints: r/o penetration of joint capsule
Unreliable F/U: consider absorbable sutures

#6: Mechanics
A. Anesthesia: 1% lidocaine with epinephrine. Consider digital block, flexor sheath block, or nerve block when applicable.
B. Irrigate extensively with pressured saline (large syringe, or under sink 5 min).
C. Evert wound edges. Place first suture in center, (bisect wound). Enter/exit @ 90°.
D. Suture until wound edges approximated.
E. Cover with bacitracin (not with skin adhesive).

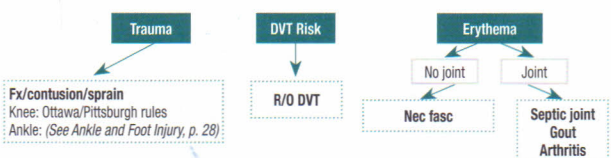
Pearls + Pitfalls
- Don't make bite width too small.
- Don't pull too tight (just approximate).
- Sterile procedure does not lower infection rates. Good irrigation does.
- Administer tetanus immunoglobulin if unvaccinated or dirty wound
- Areas to avoid using epi: tips of digits, tip of nose, ear, genitals
- Consider splint and/or bulky dressing if lac crosses joint
- Very long lac + cosmesis not important = consider staples

Documentation
General: Time since injury. Mechanism of injury.
Neuro/wound: Sensation intact/full ROM/2-pt discrimination. No exposed tendon. No foreign bodies.
Procedure note: Anesthesia with _ cc 1% lidocaine with epinephrine. Irrigate with extensive high-pressure saline. Placed _5.0 [simple interrupted] nylon sutures. Dressed with bacitracin. Patient tolerated procedure well.
Dispo: Keep dry for 24 hrs, then clean daily with soap and water. Return for signs of infection (swelling, pain, redness, pus, fever).
Suture removal: Face: 5d. High-tension: 10-14d. Everything else: 7-10d. (Skin Adhesive/absorbables don't need to return.)

Khan F, Habboushe J, Shah K. Updated by **Gupta N, Sperling J, Mohamed H, Patel S, Kulkarni M.**

Leg Pain

Trauma • DVT risk factors • Fever • Erythema
Swelling • Groin/scrotum involvement • Pain out of proportion



	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Trauma	ACL tear	Lachman>ant drawer	Outpt MRI	Knee immob, F/U ortho
	Ankle injury	*(See Ankle and Foot Injury, p. 28)*		
	Collaterals	Laxity @ 30° (valgus/varus)	Outpt MRI	Knee immob, F/U ortho
	Knee Fx	Ottawa/Pittsburgh	X-ray	Cs ortho, (knee immob)
	Meniscus	Click/pain @ rotation	Outpt MRI	Knee immob, F/U ortho
Other	Abscess/ cellulitis	Erythema, fever?	Wound Cx US Abscess?	Abs: I&D; Cel: ABx Big/circumferential? → admit
	DVT	Unilateral, Well's criteria	D-Dimer, US	Anticoag; admit vs close F/U
	Nec fasc	Pain out of proportion/bullae	Clinical	ABx, surgery
Joint	Arthritis	Ddx: Osteo-, rheum-, sarcoid, etc.		Pain control
	Gout	Red joint (big toe?)	History, tap	NSAIDs/colchicine
	Septic joint	Red joint, no move, fever?	Clinical, tap	ABx, cs surgery

Pearls + Pitfalls
- Calcaneal and L-spine films for jumpers
- Palpate above and below injury
- Beware of tibial plateau fx

Ottawa Knee Rule
Age < 55
Walk in ED (4 steps)
No point tenderness fibular head
No point tenderness patella
Flex 90°

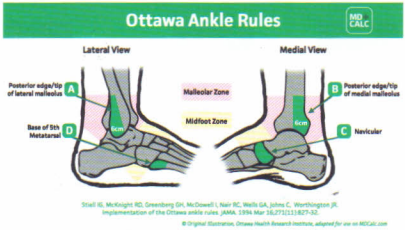
Pittsburgh Knee Rule
Blunt trauma/fall
AND
Age 12-55
Walk in ED (4 steps)

Documentation
General: Ambulates 4 steps in ED. DVT risks: OCP, tobacco, immobilization, cancer, h/o clots
Neurovascular: Sensation intact/full ROM throughout. +2 distal pulse b/l, <2 sec cap refill
Skin: CM x CM area of erythema with/without induration, fluctuance, drainage of fluid
Msk: Flexes to 90°, anterior drawer test, valgus/varus laxity @ 30°, clicks @ rotation. Point of tenderness. Compartments soft.
Joint: Erythema, tender. Range of motion.

Mead J, Shah K. Updated by **Clark C, Lin B, Larsen C, Ng K, Jones M.**

Ankle and Foot Injuries

#1: Neurovascular compromise or open Fx → Consult ortho immediately



Ottawa Ankle Rules: No XR required if all of the following:

Age < 55
Ambulate after injury ***AND*** in ED (4 steps each)
No point tenderness distal 6cm of posterior lateral malleolus ***AND*** posterior medial malleolus
No point tenderness at base of 5th metatarsal
No point tenderness at navicular
ALSO: Palpate proximal tib-fib; palpate base of 2nd MT

DISEASE	H/P	XR	TREATMENT
Achilles rupture	+Thompson test, recent quinolone	Clinical	Splint in plantar flexion, F/U ortho
Calcaneus	Heel pain, fall from height	r/o other Fx (spine, tib plateau)	Cs ortho
Jones Fx	5th metatarsal	Diaphysis Fx	Cs ortho, no bear wt
Lisfranc		MTs displaced from tarsus	Cs ortho
Maisonneuve	High impact, medial ankle, prox fib TTP	Tib-fib XR, prox fib + medial mal Fx	Cs ortho
Pseudo-Jones Fx	5th MT	Proximal avulsion of 5th MT	Aircast or splint + hard shoe, F/U ortho
Sprain	Negative Ottawa	Negative	Aircast or splint
Weber A: below ankle joint B: level of joint C: above joint	Lateral malleolus		Cs ortho (B/C)
Other Fxs	Bi-mal, tri-mal, talus, more → assess joint stability		Cs ortho

Pearls + Pitfalls

- SPRAINS need aircast or splint (not just ACE).
- Lisfranc and Maisonneuve injuries are often missed.
- Splint or cast applied: give pt compartment syndrome precautions.

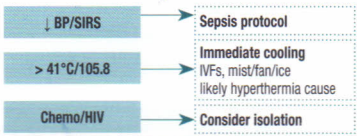
Documentation

Sensation intact and full ROM throughout, +2 distal pulse b/l, < 2s cap refill pre- and post-intervention
Bony deformity? Swelling?
Document Ottawa exam/proximal fibula tenderness

Mead J, Shah K. Updated by **Hay GP, Sperling J, Mohamed H, Ng K, Jones M.**

Fever

Low BP • AMS • Immunocompromised (Chemo/HIV/transplant)
Meds (NMS/SS/MH) • Environmental exposure
Other SIRS/qSOFA criteria



REAL FEVER	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Abdominal (Appy, Gb, pancreatitis, Sbp, PID, etc.)			*(See Abdominal Pain, p. 20)*
AOM	Earache, otoscopy	Clinical	Amox
Encephalitis	HA, AMS, seizure	CT/**LP**	IV ABx/antiviral/isolation
Meningitis	HA, neck, photophobia	CT/**LP**	ABx *before* LP, isolation, steroids?
PE	SOB/CP, low-grade fever?	D-Dimer/CTA	*(See SOB, p. 16)*
PNA	Sputum, crackles	CXR	*(See SOB, p. 16)*
Prostatitis	s/p biopsy/procedure	Clinical, urine cx	ABx, IVF
Skin	Red, hot, abscess	BCX, wound Cx	I&D, ABx
Strep	Sore throat, Centor MD CALC	Clinical/Cx	*(See Sore Throat, p. 14)*
URI/Viral	Cough, congestion, aches	Clinical	Symptomatic Tx
UTI/Pyelo	Urinary Sx, CVAT	UA	*(See Abdominal Pain-Diffuse, p. 22)*

HYPERTHERMIA	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
CNS lesion	Head trauma/CVA		Cooling
Cocaine	Dilated pupils, agitation, diaphoresis	UTox	Benzos
Heat stroke	Exposure, rash, AMS	CPK, Cr	Cooling
NMS/SS/MH	Rigid, AMS?, meds, clonus	CPK, Cr	Benzos, cyproheptadine/dantrolene?
Thyroid storm	AMS, CV changes (score) MD CALC	TSH, fT4	Beta-blocker, cs endo

Sepsis protocol (check lactate!)
SIRS for screening, qSOFA for prognosis
Aggressive IVFs (don't fear intubation unless DNR/DNI)
Early, broad ABx; transfuse if HCT <30?
Consider central line and pressors
Source control. Serial lactates. Admit to ICU

Neutropenic fever
Chemotherapy (absolute neutrophils <500)
Early ABx, isolation
No rectal exams/no rectal temps

Pearls + Pitfalls
- Sepsis definition/best protocol is under debate and always changing.
- 1°C = 18 bpm ;1°F = 10 BPM (can't trust if on βB/CCB meds)
- Indwelling lines/catheters → think line sepsis
- Temporal/oral temps are unreliable (get rectal temp if suspicious).
- HIV? Broaden differential.

Documentation
Source pos and negs (productive cough, urinary Sx, abscess, meningeal symptoms)
SIRS/sepsis risk factors (BP, HR, general appearance)
SIRS/sepsis: reassessment after initial fluid bolus (lactate, pt status)

Matern J, Lanoix R. Updated by **Pearson J, Lin B, Larsen C, Villegas L, Fernandez D.**

Syncope/Pre-Syncope

Heart disease • Chest pain • SOB • Palpitations
Sudden (no prodrome) • Dark stool • Pain • Pallor
Focal neuro deficit • Tox/environmental exposure

#1: Immediate EKG & Fingerstick & UPreg

	DISEASE	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Bad & Painless	Anemia	Pallor conjuctiva, FOBT	CBC, coags, T&S	Source? Transfuse?
	Cardiac: arrhyth/valv	Sudden, CP, SOB, palps, murmur Young: FHx sudden death	EKG, troponins, echo?, BMP	Admit to telemetry
	↓ Glucose	Diabetic, sulfonylurea?	serial FSBG	D50/food, sulfonyl → octreotide? + admit
Bad & Painful	AAA rupture	Abdominal pain, pallor	US, Coags/T&S	Emergent surgery
	Aortic Dissection	Tearing pain, CP → back	CXR/**CT-A**	Goal HR 60-70 → Goal MAP 60-75 → cs surgery
	Ectopic rupture	Abd pain, young woman	UPreg, US	Emergent OB surgery
	PE	CP/SOB, sudden, Wells/PERC	D-Dimer/CT-A	*(See SOB, p. 16)*
	SAH	Sudden, worst, syncope?	**CT**/LP	*(See Headache, p. 8)*
Other	Orthostatic	Dry, orthostatic BP	R/O anemia	Hydrate
	Seizure	Seizure Hx, incontinence, post-ictal	1st → √ BMP, CT, LP?	Treat cause, cs neuro
	Vasovagal	Prodrome	Exclusion	

Pearls + Pitfalls

- Young: Wolff-Parkinson-White, Brugada syndrome, long QT syndrome. FH of sudden death?
- Old: Low threshold for admission for cardiac syncope.
- Cardiac subcategories: MI, arrhythmia, valvular
- Stroke/TIA is an *extremely rare* cause of syncope.
- Unknown/prolonged downtime → add CPK r/o rhabdo
- Some clinical rules may apply.

Documentation

General: History of CAD/MIs, anemia/dark stools, sudden, with CP/SOB/palps, with pain (HA/CP/abd pain)
HEENT: No conjunctiva pallor. Look for signs of head injury (if so, *see Head Injury, p. 9* and *Laceration, p. 26*). Tongue lacs.
Abdominal: Soft, non-tender, non-distended. No pulsating masses.
Rectal: Brown, FOBT-negative stool.
Neuro: Nonfocal exam, returned to baseline MS.

Geracimos D, Habboushe J, Lanoix R. Updated by **Ahn J, Dibble B, Beck-Esmay J, Villegas L, Fernandez D.**

Weakness

Very non-specific: Get a good story

Focal • Onset • Dizzy • Pain • Shortness of breath • Tox/meds

#1: Immediate EKG & Fingerstick

#2 Consider Vital Signs

- ↓ O_2
- ↓ Glucose
- ↑ Temp (hyperthermia or infection)
- ↓ Temp (hypothyroid)

#3 Focal or General?

FOCAL	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
CVA/ICH	Sudden, AFib?, blood thinner	CT	Emerg neuro (tPA?)
Guillain-Barré	Ascend, ↓reflex, recent infection	Clncl	Intubate? Cs neurology
Multiple sclerosis	Young, Δ vision, APD	MRI	F/U neuro
Myasthenia gravis	Blurry, ptosis/diplopia	Edrophonium	Pyridostig, Cs neurology
Transverse myelitis	Fast, ↑reflex, ↓rect tone	MRI	Cs neurology, steroids?

GENERAL	HISTORY & PHYSICAL EXAM	WORKUP	TREATMENT
Anemia	Conjuctiva pallor, FOBT	CBC (coag/T&S)	Source? Transfuse?
Cardiac	Elderly, SOB/CP/palps	EKG, troponins	ASA, admit
Depression	HI/SI/meds?	Exclusion	R/O SI, F/U psych
Electrolytes	Dialysis, K/Na/Ca	BMP, EKG (K+)	
Hypothyroid	↑ Weight, cold, ↓ HR, edema	TSH	F/U endocrine
Hypovolemia	Mucous membranes	Clinical, BUN/Cr	IVFs
Infection	Fever, source?	UA, BCX, CXR, LP	IVFs, ABx, source?
Δ Meds	CV, pain, diuretics		
Rheum	SLE, PMR, etc.	ESR/CRP	
Tox	Toxidrome	Clinical	Antidote? Tox consult?

Documentation
VSs: NAD. FS.
HEENT: Conjunctiva pallor, PERRLA, EOMI
Lung: Crackles?
Neuro: Full exam. Cranial nerves. Reflexes. 5/5 strength in all 4 extremities.
Rectal: Good tone, FOBT-negative, brown stool

Seccurro S, Habboushe J, Lanoix R. Updated by **Nunez J, Dibble B, Beck-Esmay J, Robak M, Gupta N.**

NEW!

Rash

Fever • Extremes of age • Toxic Appearing • Immunocompromised
Exfoliative • Petechiae/Purpura • Mucosa/Oral lesion
Exposures/Travel • Medications • Systemic symptoms • Palms/Soles

	DISEASE	H & P EXAM	WORKUP	TREATMENT
Dangerous	DRESS, Erythroderm*	New/ΔRx, diffuse, systemic	Sepsis w/u, LFT	D/C drug
	Endocarditis	Fever, IVDA, murmur, Janeway/Osler/nail splinter	TEE, sepsis w/u, Duke's criteria	IV ABx, CT surgery if HF or shock
	MAHA/TTP/DIC	Petechiae, toxic, AMS	CBC, smear, sepsis w/u, DIC +hemolysis labs	Cs Heme TTP-plasmapheresis
	Meningococcemia	Meningitic, petechiae, toxic	Sepsis w/u, LP	IV ABx + steroids
	Necrotizing fasciitis	Ext pain → bullae/crepitus	Sepsis w/u, CT, ⌐RINEC	IV ABx; Cs surg
	Pemphigus Vulgaris*	Elderly, bullae, +MM, +Niko	Sepsis w/u	Steroids, tx 2° infxn
	RMSF	Fever, Petechiae (limbs to central), travel	Clinical/Antibody test	Doxycycline
	SSSS*	Fever, exfoliation, toxic	Sepsis w/u	IVF/ABx/ICU
	TEN/SJS*	+Nikolsky, toxic, mucosa	Septic w/u	IVF/ABx/ICU vs burn
	Toxic Shock Synd*	Desquamation, ID source	Sepsis w/u	IVF, pressors?, ICU
	Urticaria/Anaphylaxis	Medication/food exposures	Clinical/exam	Airway, Epi, H_1/H_2
Common	2° Syphilis	Papular, palms +soles, STDs	RPR, VDRL, FTA, HIV	Penicillin IM
	Contact Dermatitis	Localized, exposure	Clinical/exam	D/C agent, top steroid
	Erythema Multi	Drug vs Infection, target	Clinical /exam	Remove agent
	Lyme Disease	Tick, Erythema migrans Bell's palsy, heart block	Lyme titer, EKG, neuro/cardio = serious	Doxycycline
	Pityriasis	Herald patch, Xmas tree	Clinical/exam	Diphenhydramine?
	Scabies	Ext pruritus, linear burrows	Clinical/exam, mites	Permeth, tx contacts
	Tinea	Scaly, raised edges, pruritis	Clinical/exam, KOH	Antifungal cream
	Viral Exanthem	Aches, fever, non-toxic	Clinical/exam	Supportive
	Zoster	Vesicular—dermatome	Eye/ear/diffuse=serious	Acyclovir, +/-steroids

*Emergent Dermatology Consult

Documentation

General: Toxic, fever, VS, exposures, medications, travel, bug bites, PMH- IC, atopy, anaphylaxis, meds

PE: Petechiae/purpura, mucosa, lymphadenopathy, palms/soles

Skin: Detailed description of rash, distribution, patterns, morphology

Pearls + Pitfalls

- Toxic w. Petechiae/Purpura = Septic until proven otherwise.
- Medications (allergic reaction): Sulfa, PCN, anti-epileptic, NSAIDS, antibiotics, chemo agents
- Truly Emergent: Meningococcemia, TTP, DIC, TSS, NF, TEN
- TTP requires: smear, Heme consult, plasmapheresis, **AVOID platelet transfusion**
- Examine **ALL** parts of patient's skin/body

Nguyen T, Wan E, Steinberg E, Rossi A.